Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-00

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Motivation

- Alternate Marking (RFC8321) is a technique for hybrid performance measurement methods.
  - It can be used to measure packet loss, latency, and jitter on live traffic.
  - The basic Alternate Marking method requires one or two bits to mark consecutive batches of packets.

- However
  - In some protocols, no additional bit can be used
  - Limited by the scalability for further extension
Basic Ideas

- Two kinds of measurement:
  - Delay, packet loss
  - Flow ID: help to identify the measured flow.
  - More reserved field for further use.
Encapsulate with the End to End IOAM

- IOAM [I-D.ietf-ippm-ioam-data] defines a generic meta data structure to records OAM information within user packets while the packets traverse a network.

- The IOAM-E2E-Type filed within the IOAM edge-to-edge option header is a 16-bit identifier which specifies which data types are used in the E2E option data.

- One bit from bit 4-15 can be used to indicate the presence of data used for alternate marking.

```
+-------------------+-------------------+-------------------+
| L | D | Reserved | FlowID |
|-------------------+-------------------+-------------------|
| FlowID (cont'd)   |                   |                   |
```

where:
- L - Loss flag;
- D - Delay flag;
- FlowID - 6-octet unsigned integer. Flow identifier field is to uniquely identify a monitored flow within the in-situ OAM domain.
Encapsulate with the PostCard Base Telemetry

- The PostCard Base Telemetry (PBT) [I-D.song-ippm-postcard-based-telemetry] is proposed to directly export the telemetry data to a collector through separated OAM packets called postcards, while not requiring inserting telemetry data into user packets.

- This proposes to use the two bits from the Reserved field from the Telemetry Information Header (TIH).

- The existing FlowID within the TIH can be reused.

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c}
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 0 & 1 \\
+-----------------------------------------------+
| Next Header | TIH Length | Reserved | L | D | Hop Count |
+-----------------------------------------------+
\end{array}
\]

where:
- L - Loss flag;
- D - Delay flag.
Thank You and Comments